

Coal is a little different. As a boy, I knew very well where coal came from because we lived in coal mining country. As a matter of fact, we had a coal mine on our farm, and the coal would come out of the mine, dust up to big chunks of coal. And we'd have to break some of those chunks to put it in our furnace. I remember taking that sledgehammer where it leaned against the wall and breaking a lump of coal and there it opened up and there was a big fern leaf. I remember as a kid the feelings I had. I wonder how long ago that fern grew. So I knew where coal came from plants. It came from plants that died. We can see the beginning of coal in the bogs of England, by the way.

But what we are doing in burning these fossil fuels is releasing the carbon dioxide that was sequestered in these plants over very long time periods. You see, what happens in photosynthesis is carbon dioxide is taken out of the air and oxygen is released into the air. If you now bury that plant, you now have sequestered the carbon dioxide. When you take it out and burn it, you are releasing the carbon dioxide.

In the last 100 years or so, we have doubled the concentration of carbon dioxide in our atmosphere. Now this is what we call a greenhouse gas. You see the effects, the greenhouse effects when you go out to your car in the parking lot in the summer and you open the door and that blast of heat hits you. What has happened is that the rays of the sun have come in over a broad spectrum of ways and they have heated up the interior of your car and that re-radiates in the infrared, and the glass of your car is relatively impervious to infrared, so it keeps that heat in there. The same thing happens in our world. The sun shines down and warms up things down here and they radiate back.

These greenhouse gases act very much in the atmosphere like the glass in your car or the glass in the greenhouse. It reflects the infrared back in, so it keeps us warmer. There are a growing number of people who believe that this increase in carbon dioxide, increasing the greenhouse gases are producing climate change in our world and producing a global warming. Of course, enough global warming could melt, it would take a very long time, couple of hundred years, probably, but could melt the polar ice caps. That would raise the level of the oceans about 200 feet. If you look around the world at the number of people who live in less than 200 feet above sea level, it's a big, big part of the world's population.

So these people who are concerned about global warming and climate change, and by the way, I would note that very small differences in temperature make huge changes in climate. During the last ice age about 10,000 years ago, our Earth was about 5 degrees Centigrade cooler than it is now. That is about 9 degrees Fahrenheit. That is not a whole lot. That is about

like going from here to Minnesota. But that 9 degrees Fahrenheit difference in temperature caused the ice age.

So when you're looking at a temperature change and saying I go from one room in my house to another and there's a bigger change than that and the sky isn't falling, how come that is a big deal? Just remember that relatively small temperature changes can make huge climate changes.

Now, the solution to the problem that the climate change-global warming people see is exactly the same solution to the problem that the national security-concerned people see, and that is we have got to move away from fossil fuels. We have got to move to renewables where we are recycling the carbon dioxide. You see, if you burn something that grew this summer, if you burn it this fall, like burning wood from a tree that may have been growing for 30, 40 years, and taking CO₂ out of the air and storing it in the tree, then when you burn the tree, you put the CO₂ back in the air, but that is the same CO₂ the tree had taken out, so it's a balance and the CO₂ doesn't go up.

So what the climate change global-warming people want to do is to reduce our dependence on fossil fuels and the concomitant release of carbon dioxide and instead substitute these renewables which simply recycle the carbon dioxide.

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Now, if you are going nuclear, by the way, it is even better. After you have paid a carbon cost for building the nuclear power plant, then there is no carbon dioxide produced for the duration of that nuclear power plant.

The third group that have common cause, and before I talk about this group, I want to note that I think that the best interests of mankind, the best interests of our country, the best interest of Republicans and Democrats, will be served if we don't criticize each others' premise. There are those who believe that the global warming thing is just silly. There are others who believe that the foreign countries that own all this oil are going to play nice and give us the oil, so why worry about the national security interests.

But rather than criticizing the premise of these others, why don't we just lock arms, because what we want to solve the problems, and in just a moment I am going to talk about the third problem, which I think is really the big one, is to reduce our dependence on fossil fuels and increase our reliance on alternatives.

The next chart, and I have got to go back 52 years to talk about the origin of this chart, because this all began 52 years ago. As a matter of fact, that anniversary will be the day after tomorrow. The 8th day of March in 1956, a speech was given in San Antonio, Texas, that I believe within a few years will be recognized as the most important speech given in all of the last cen-

tury. That speech was given here in 1956, so we are right here on the chart now.

The United States is king of oil. We are producing more oil, using more oil, exporting more oil I think than any other country in the world, and an oil geologist by the name of M. King Hubbert in this very famous speech in San Antonio, Texas, told a group of oil people that in 14 years, roughly 14 years, it turned out to be 14, you will peak in oil production, and no matter what you do after that, you will not be able to produce more oil.

Now, remember, the United States then is king of oil. Oil wells everywhere, Oklahoma, Texas. A little interesting sidelight here, why were there so many? That is because, as I understand it, of the law of capture. If the oil came out of your well, you owned the oil, even though much of it might have been sucked out of the ground of the person that owned the land next to you. It was called the law of capture, I think. So if you wanted to get some of those revenues, you had to drill your own well. I understand that wells were drilled in graveyards and through the foyers of churches. If you look at some of those pictures, it looked like a forest of oil rigs out there, and I think the reason was this law of capture. But, right on schedule, in 1970 we peaked in oil production. This is a chart of that peak. We reached a peak here in 1970.

Now, M. King Hubbert had included only the Lower 48 in his prediction. He had not included Alaska, where we found a lot of oil. He had not included the Gulf of Mexico, where we found a meaningful amount of oil. But you notice that the slide down the other side of Hubbert's Peak just had a little blip from the oil that we found in Alaska and the Gulf of Mexico.

So, right on schedule M. King Hubbert and his prediction of a phenomenon which we call today peak oil, said that we would reach that maximum in the United States in 1970. Now, this same forecaster, with the enormous credibility of having been right on target for the United States, said that the world would be peaking about now.

The next chart is an interesting one, and if you had only one graph, one chart you could look at to talk about this, it would be this one, because this has so much information on it. The little bars here show the discoveries of oil. You notice that we started discovering it way back there, some of it in the Depression really, and then after the end of the Depression just before the war, and then huge discoveries in the fifties, the sixties and seventies. But ever since then, down, down, down, down. Kind of a ragged down, because every once in awhile you hit a pretty big field, and here is the spike here. But on average every year since the seventies and eighties it has been down, down, down.

The solid black line here represents the oil that we have produced, which is